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Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/W.No.11/NK/CSR-06/874/CEMENT/2015-16 Date: 13.06.2015

TEST REPORT ON CEMENT

*** CUSTOMER**	:	**Asst. Executive Engineer**, Vidyaranyapura Sub Division, BBMP, Bangalore.
***AGENCY**	:	**Mr. N. Keerthi,** #66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.
***NAME OF THE WORK**	:	Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
***REFERENCE**	:	EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015
SAMPLE ID	:	Cement
SAMPLE RECEIVED ON	:	11.06.2015
PERIOD OF TESTING	:	11.06.2015 to 13.06.2015

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988(RA-2009)	29.00 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988(RA-2009)	135 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988(RA-2009)	475 Minutes	Not More than 600 Minutes
3	Soundness by Le Chartlier Method	IS-4031 (Part-3) 1988(RA-2009)	1 mm	Not more than 10mm

*Information is furnished by the Customer/Representative.

Note:

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⇒ Any Query regarding the report must be reported within 30 days from the date of testing.

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VIDYARANI P.K.
Technical Manager

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Job No.: CTCE/BBMP/W.No.11/NK/CSR-06/874/SAND-Gradation/2015-16 : 13.06.2015

TEST REPORT ON DETERMINATION GRADATION OF FINE AGGREGATES

*** Customer** : **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. N. Keerthi,**
#66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.

*** Name of Work** : Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015

Technical Reference : IS : 2386 Part 1 - 1963 RA-2007

Sample ID : Fine Aggregates

Sample Received on : 11.06.2015

Date of Testing : 13.06.2015

Total Wt. of Aggregates in gms **1000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	96.80	90-100	90-100	90-100	95-100
2.36	77.90	60-95	75-100	85-100	95-100
1.18	55.00	30-70	55-90	75-100	90-100
600 Micron	26.00	15-34	35-59	60-79	80-100
300 Micron	13.50	5-20	8-30	12-40	15-50
150 Micron	5.00	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

Remarks : This sample is under Zone-I specific limits.

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Job No.: CTCE/BBMP/W.No.11/NK/WMM/Gradation/2015-16 : 13.06.2015

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **Mr. N. Keerthi,**
#66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.

Name of Work : Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015

Date of Testing : 13.06.2015

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	135	135	2.7	97.3	95-100
22.4	1605	1740	34.8	65.2	60-80
11.2	780	2520	50.4	49.6	40-60
4.75	615	3135	62.7	37.3	25-40
2.36	625	3760	75.2	24.8	15-30
0.600	485	4245	84.9	15.1	8-22
0.075	525	4770	95.4	4.6	0-8

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.11/NK/WMM/Gradation/2015-16 : 13.06.2015

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **Mr. N. Keerthi,**
#66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.

Name of Work : Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015

Date of Testing : 13.06.2015

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	130	130	2.6	97.4	95-100
22.4	1625	1755	35.1	64.9	60-80
11.2	785	2540	50.8	49.2	40-60
4.75	705	3245	64.9	35.1	25-40
2.36	645	3890	77.8	22.2	15-30
0.600	600	4490	89.8	10.2	8-22
0.075	365	4855	97.1	2.9	0-8

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GRADATION FOR WMM
MORTH TABLE-400-11

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Reference : EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015

Date of Testing : 13.06.2015

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	135	135	2.7	97.3	95-100
22.4	1650	1785	35.7	64.3	60-80
11.2	795	2580	51.6	48.4	40-60
4.75	625	3205	64.1	35.9	25-40
2.36	635	3840	76.8	23.2	15-30
0.600	580	4420	88.4	11.6	8-22
0.075	390	4810	96.2	3.8	0-8

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Reference : EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015

Date of Testing : 13.06.2015

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	160	160	3.2	96.8	95-100
22.4	1525	1685	33.7	66.3	60-80
11.2	895	2580	51.6	48.4	40-60
4.75	635	3215	64.3	35.7	25-40
2.36	625	3840	76.8	23.2	15-30
0.600	630	4470	89.4	10.6	8-22
0.075	365	4835	96.7	3.3	0-8

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Reference : EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015

Date of Testing : 13.06.2015

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	105	105	2.1	97.9	95-100
22.4	1585	1690	33.8	66.2	60-80
11.2	835	2525	50.5	49.5	40-60
4.75	645	3170	63.4	36.6	25-40
2.36	600	3770	75.4	24.6	15-30
0.600	635	4405	88.1	11.9	8-22
0.075	385	4790	95.8	4.2	0-8

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13.06.2015

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.
Name of the Work	Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	13.06.2015

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	388	389	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	303	303	
4	Aggregate Impact value = percent fines	21.91	22.11	
	100* (W_2/W_1)%			**22.01**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.11/NK/WMM/AIV/2015-16

13.06.2015

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.
Name of the Work	Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	13.06.2015

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	390	391	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	305	305	
4	Aggregate Impact value = percent fines	21.79	21.99	
	100* (W_2/W_1)%			21.89

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.11/NK/WMM/S-T/2015-16 13.06.2015

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.
Name of Work	Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	13.06.2015

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Result : Flakiness Index = **11.65%**

Elongation Index = **13.82%**

Result : Combined Flakiness & Elongation index 25.47%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/W.No.11/NK/WMM/S-T/2015-16 13.06.2015

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.
Name of Work	Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	13.06.2015

Result : Flakiness Index = **12.35%**

Elongation Index = **13.25%**

Result : Combined Flakiness & Elongation index 25.60%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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T-2377

Job No: CTCE/BBMP/W.No.11/NK/CSR-06/874/SDBC(QB)/2015-16 26.06.2015

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

*CUSTOMER	:	**Asst. Executive Engineer**, Vidyaranyapura Sub Division, BBMP, Bangalore.
*AGENCY	:	**Mr. N. Keerthi,** #66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.
*NAME OF THE WORK	:	Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
REFERENCE	:	EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015
*SAMPLE ID	:	Bitumen
DATE OF SAMPLING	:	24.06.2015
PERIOD OF TESTING	:	26.06.2015

The results of the tests conducted on the bitumen sample using for Semi Dense Bituminous Concrete.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2009)	88	80 to 100
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2009)	43	Min. 40
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2009)	296	Min. 220

*Information is furnished by the Customer/Representative.

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Technical Manager

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Job No.: CTCE/BBMP/W.No.11/NK/SDBC/AIV/2015-16 26.06.2015

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.
Name of the Work	Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	26.06.2015

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	392	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	304	306	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	21.85	21.94	21.89

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

Note:

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Job No.: CTCE/BBMP/W.No.11/NK/SDBC/Shape_T/2015-16 26.06.2015

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.
Name of Work	Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	26.06.2015

Result : Flakiness Index = **12.78%**

Elongation Index = **13.92%**

Result : Combined Flakiness & Elongation index **26.70%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/W.No.11/NK/SDBC/Stripping/2015-16 27.06.2015

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.
Name of the work	Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	27.06.2015

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.3	3.40	96.60
2	3.4		
3	3.5		

Comments:

→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 95%

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Job No.: CTCE/BBMP/W.No.11/NK/SDBC/Sp_Wa/2015-16 27.06.2015

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.
Name of the Work	Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	27.06.2015

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2018	2019	2020	
2	Weight of basket suspended in water	W_2 g	750	750	750	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1268	1269	1270	
4	Weight of saturated surface dry aggregate in air	W_3 g	2018	2019	2020	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	750	750	750	
6	Weight of oven dried aggregate	W_4 g	2000	2006	2005	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.667	2.675	2.673	2.672
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.732	2.722	2.728	2.727
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.90%	0.65%	0.75%	0.77%

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0 %

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Job No.: CTCE/BBMP/W.No.11/NK/SDBC/Bitumen/2015-16 27.06.2015

BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
AGENCY	**Mr. N. Keerthi,** #66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.
NAME OF THE WORK	Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
REFERENCE	EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015
SAMPLE I/D	Roads in Varadarajanagara in Ward No.11, BBMP, Bangalore.
DATE OF TESTING	27.06.2015

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	475	475
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25	25.00
7. Bitumen content in %	5.00	5.00
8. Average	**5.00**	

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Job No.: CTCE/BBMP/W.No.11/NK/SDBC/Bitumen/2015-16 27.06.2015

GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IS2386 and IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
AGENCY	**Mr. N. Keerthi,** #66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.
NAME OF THE WORK	Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
REFERENCE	EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015
SAMPLE I/D	Roads in Varadarajanagara in Ward No.11, BBMP, Bangalore.
DATE OF TESTING	27.06.2015

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	38.25	8.05	8.05	91.95	90-100
4.75	263.8	55.54	63.59	36.41	35-51
2.36	42.35	8.92	72.51	27.49	24-39
1.18	36.35	7.65	80.16	19.84	15-30
0.3	30.25	6.37	86.53	13.47	9-19
0.075	34.15	7.19	93.72	6.28	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	33.25	7.00	7.00	93.00	90-100
4.75	262.5	55.26	62.26	37.74	35-51
2.36	45.25	9.53	71.79	28.21	24-39
1.18	35.26	7.42	79.21	20.79	15-30
0.3	32.26	6.79	86.00	14.00	9-19
0.075	38.56	8.12	94.12	5.88	3-8

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Job No.: CTCE/BBMP/W.No.11/NK/SDBC/AGG/2015-16 27.06.2015

Aggregate Gradation Test

IS : 2386 Part I

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.
Name of the Work	Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete (SDBC)
Date of Testing	27.06.2015

Total Weight of Sample: **5350** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade II MORTH specification
9.5	415	7.8	7.76	92.24	90-100	
4.75	2585	48.3	56.07	43.93	35-51	
2.36	740	13.8	69.91	30.09	24-39	
1.18	480	9.0	78.88	21.12	15-30	
0.3	425	7.9	86.82	13.18	9-19	
0.075	435	8.1	94.95	5.05	3-8	

Total Weight of Sample: **5450** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade II MORTH specification
9.5	330	6.1	6.06	93.94	90-100	
4.75	2915	53.5	59.54	40.46	35-51	
2.36	635	11.7	71.19	28.81	24-39	
1.18	450	8.3	79.45	20.55	15-30	
0.3	410	7.5	86.97	13.03	9-19	
0.075	395	7.2	94.22	5.78	3-8	

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Job No.: CTCE/BBMP/W.No.11/NK/SDBC/Stability/2015-16 27.06.2015

TEST REPORT ON STABILITY OF MIX

Customer	:	**Asst. Executive Engineer**, Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	:	**Mr. N. Keerthi,** #66, Anandappa Building Hospital road, Yelahanka, Bangalore – 64.
Name of the Work	:	Road development and asphalting works at Gandhi Satue Road, Varadarajanagara in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	:	EE/BTP/BBMP/E-PMT/11(16934)/WO/64/2015-16 Dated: 29.04.2015
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Semi Dense Bituminous Concrete
Date of Testing	:	27.06.2015

The results of the tests conducted on the Semi Dense Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-16)
1	Marshal Stability, Kn	8.15	8.30	8.2 Kn (min)
2	Marshal flow, mm	3.05	3.20	2 – 4
3	Percent air voids in Mineral Aggregate	3.15	4.20	3 – 5
4	Voids in Compacted Mix	13.60	14.35	13 – 15
5	Percent Voids filled with Bitumen	67.30	68.30	65 - 78
6	Density, g/cc	2.26	2.27	--

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